

REMARKS

Claim 10 is amended. Claims 1-16, as amended, and withdrawn Claims 17-20 remain in the application.

Applicants amended the specification on page 4 to correct a minor typographical error.

No new matter is added by the amendments to the specification, the drawings and the claims.

In the Office Action dated August 25, 2005, the Examiner stated that color photographs and color drawings are not accepted unless a petition filed under 37 CFR 1.84(a)(2) is granted. Attached hereto is a sheet of proposed changes to Fig. 2 labeled "Annotated Sheet Showing Changes". Upon acceptance by the Examiner, Applicants will file a replacement drawing sheet.

The Examiner objected to the specification as failing to provide proper antecedent basis for the claimed subject matter. The Examiner stated that it is unclear how the two ends of the two drive means can be fixed to one of the walls of the shaft, a ceiling of the shaft, a counterweight guide, a car guide, a crossbeam, a counterweight, and a car.

As explained in the specification on page 5, line 6, through page 6, line 3, each of the two drive means 19, 19' has two ends 18, 18'. It is stated in lines 15-17 on page 5 that "Each of the ends 18, 18' of the drive means 19, 19' is fixed to a shaft wall or a shaft ceiling or a car guide or a counterweight guide or a crossbeam 8 or to the car 11 or to the counterweight 12." As shown in the figures and described in the specification:

A. In Figs. 3 and 4, the ends 18 are fastened to the shaft wall or the shaft ceiling or the car guide 5' and the ends 18' are fastened to the shaft wall or the shaft ceiling or the crossbeam 8 or the car guide 5.

B. In Figs. 5, 6, 9 and 10, one or both of the ends 18 and 18' is or are fastened to the shaft wall or the shaft ceiling or the crossbeam or the car guide.

C. In Figs. 7 and 8, the ends 18 are fastened to the car 11 and the ends 18' are fastened to the counterweight 12.

D. The crossbeam 8 can be fastened to the counterweight guides 9, 9' and to the car guide 5 at the first wall of the shaft 10 as stated on page 6, line 32, through page 7, line 2.

Thus, the specification and the drawings provide antecedent basis for the claimed subject matter.

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The Rejections:

The Examiner rejected Claims 1, 2, 8, 9, 10, and 13 under 35 U.S.C. 102(e) as being anticipated by Bauer (U.S. Patent # 6742628). The Examiner stated that Bauer discloses:

an elevator system having a car 5 and a counterweight 7 connected by a drive means 16 and moveable in a shaft 1;

a pair of car guides 10 and 22 mounted in the shaft 1;

a pair of counterweight guides 9 is also mounted in the shaft 1;

a crossbeam 15 attached to the counterweight guides 9 and one of the car guides 10;

a drive motor 14 is also included; and

the drive motor 14 is mounted on a crossbeam 15 and coupled to a pair of drive pulleys 13 adapted for engaging the drive means 16 to move the car 5 and the counterweight 7 in the shaft 1.

Regarding Claim 2, the Examiner stated that Bauer arranges drive pulleys 18 on opposite sides of an imaginary line horizontal connector of the car guides 10 and 22 (Figures 3 and 4).

Regarding Claim 8, the Examiner stated that Bauer shows counterweight guides 9 and one car guide 10 positioned at apices of a substantially horizontal triangle and a crossbeam 15 fastened at end regions to the counterweight guides 9 and at a center region to one of the car guides 10 (Figure 3).

Regarding Claim 9, the Examiner stated that Bauer further discloses car guides 10 and 22 and counterweight guides 9 arranged to extend substantially vertically in the shaft 1 and a crossbeam arranged to extend substantially horizontally in the shaft 1.

Regarding Claim 10, the Examiner stated that Bauer discloses:

an elevator having a car 5 and a counterweight 7 connected by a drive means 16 and movable in a shaft 1;

an elevator car 5 moveable in a shaft 1 along a pair of car guides 10 and 22 mounted in the shaft 1;

a counterweight 7 moveable in the shaft 1 along a pair of counterweight guides 9 mounted in the shaft 1; and

a drive motor 14 mounted on a crossbeam 15 for moving the car 5 and the counterweight 7 in the shaft 1.

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Regarding Claim 13, the Examiner stated that Bauer further discloses an elevator with a car 5 suspended in a shaft 1 with a 2:1 ratio and a drive motor 14 being arranged in a region above a travel path of a counterweight 7 in the shaft 1.

The Examiner rejected Claims 3 and 4 under 35 U.S.C. 103(a) as being unpatentable over Bauer in view of Cox (U.S. Patent # 3559768). The Examiner admitted that Bauer does not specifically teach connecting drive pulleys to a drive motor and brake by a shaft, but stated that Cox teaches an elevator system with drive pulleys 11 and 25 operatively connected by a shaft 12 and 24 with a drive motor 14 and a brake 15. Therefore, according to the Examiner, it would have been obvious to one of the ordinary skill in the art to put the drive pulley, motor, and brake of Bauer on a common shaft element as taught by Cox to have the shaft engage and drive the drive pulley, motor, and brake.

Regarding Claim 4, the Examiner admitted that Bauer is silent on the arrangement of drive pulleys on a shaft being between a drive motor and a brake, but stated that Cox teaches a system where drive pulleys 11 and 25 are arranged between a drive motor 14 and brake 15 on a shaft 12 and 24 (Figure 1). Therefore, according to the Examiner, it would have been obvious to one of the ordinary skill in the art to incorporate the arrangement of drive pulleys between a drive motor and brake on a shaft taught by Cox to the elevator disclosed by Bauer to equally distribute the load on the shaft between drive motor, drive pulleys, and brake.

The Examiner rejected Claims 5-7 under 35 U.S.C. 103(a) as being unpatentable over Bauer in view of Cox, and further in view of Gates (U.S. Patent # 6098758). The Examiner admitted that Bauer does not show the drive motor and brake being mounted on a bracket fastened to a crossbeam, but stated that Gates teaches the use of a bracket 44 to fasten a drive motor 42 and brake to a crossbeam 24. Therefore, according to the Examiner, it would have been obvious to one of the ordinary skill in the art to mount the motor and brake of Bauer on the crossbeam as taught by Gates to rigidly secure a drive motor and brake to a crossbeam to overcome forces exerted on the drive motor and brake that will release the drive motor and brake from the crossbeam.

Regarding Claim 6, the Examiner admitted that Bauer does not disclose a bracket mounted at a center region of a crossbeam, but stated that Gates teaches a bracket 44 mounted at a center region of a crossbeam 24 (Figure 4). Therefore, according to the Examiner, it would

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have been obvious to one of the ordinary skill in the art to mount the bracket as taught by Gates to the center region of the crossbeam of Bauer to equally distribute the load on the crossbeam.

Regarding Claim 7, the Examiner admitted that Bauer does not recite having drive pulleys arranged substantially in a region with an enclosure of a bracket, but stated that Cox teaches an arrangement where drive pulleys 50, 62, and 54 are in a region within an enclosure of brackets 44. Therefore, according to the Examiner, it would have been obvious to one of the ordinary skill in the art to arrange the drive pulleys of Bauer substantially within an enclosure of a bracket taught by Cox to make the drive pulleys readily accessible with the bracket.

The Examiner rejected Claim 12 under 35 U.S.C. 103(a) as being unpatentable over Bauer in view of Adifon et al. (U.S. Patent # 6848543). The Examiner admitted that Bauer is silent on a elevator system with at least two belt drive means connecting a car with a counterweight, but stated that Adifon et al. teaches the use of two drive means 330 and 332 connecting a car 314 and a counterweight 520, Adifon et al. also shows the drive means 330 and 332 being belts (Figures 6-8). Therefore, according to the Examiner, it would have been obvious to one of the ordinary skill in the art to apply the teachings of using a belt as drive means taught by Adifon et al. to the car and counterweight of Bauer to optimize drive traction.

The Examiner rejected Claims 14 and 15 under 35 U.S.C. 103(a) as being unpatentable over Bauer in view of Fichtner et al. (WO 2002/053486 A1). The Examiner admitted that Bauer is silent on an elevator with a car in a shaft with a 2:1 ratio with a drive motor arranged above the car, but stated that Fichtner et al. teaches an elevator with a car 6 in a shaft 5 with a 2:1 ratio and a drive motor 7 arranged in a region above a travel path of the car 6 (Figure 2). Therefore, according to the Examiner, it would have been obvious to one of the ordinary skill in the art to suspend the car of Bauer with a 2:1 ratio taught by Fichtner et al. and arrange the drive motor of Bauer above a travel path of the car also taught by Fichtner et al. to provide available space in the shaft.

Regarding Claim 15, the Examiner admitted that Bauer is silent on an elevator with a car in a shaft with a 2:1 ratio with a drive motor arranged above the car and a counterweight, but stated that Fichtner et al. teaches an elevator with a car 6 in a shaft 5 with a 2:1 ratio and a drive motor 7 arranged in a region above a travel path of the car 6 and a travel path of a counterweight 11 (Figure 3). Therefore, according to the Examiner, it would have been obvious to one of the

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ordinary skill in the art to suspend the car of Bauer with a 2:1 ratio taught by Fichtner et al. and arrange the drive motor of Bauer above a travel path of the car and counterweight also taught by Fichtner et al. to provide available space in the shaft.

The Examiner rejected Claim 16 under 35 U.S.C. 103(a) as being unpatentable over Bauer in view of Hamaguchi (U.S. Patent # 6626266). The Examiner admitted that Bauer is silent on an elevator with a car in a shaft with a 1:1 ratio with a drive motor arranged above the car, but stated that Hamaguchi teaches an elevator with a car 4 in a shaft I with a 1:1 ratio and a drive motor 11 arranged in a region above a travel path of the car 4. Therefore, according to the Examiner, it would have been obvious to one of the ordinary skill in the art to suspend the car of Bauer with a 1:1 ratio taught by Fichtner et al. and arrange the drive motor of Bauer above a travel path of the car also taught by Fichtner et al. to provide available space in the shaft.

The Cited References:

Bauer shows an elevator installation having a car 5 and a counterweight 7 connected by suspension ropes 16 and movable in an elevator hoistway 1. A pair of car guide rails 10, 22 and a pair of counterweight guide rails 9 are fastened to the hoistway side-walls. A supporting construction 15 is attached to the counterweight guide rails 9 and to the car guide rail 10. A drive motor 14 is mounted on the supporting construction 15 and is coupled to a single traction sheave 13 engaging the ropes 16 to move the car 5 and the counterweight 7 in the hoistway 1.

Cox shows a means for connecting together the hoist rope traction sheaves of two independent elevators in the event of a power failure. The hoist ropes for on elevator pass around guide sheaves to reverse their normal direction so that the descent of a loaded car will pull up an empty car in order to evacuate a building by gravity operation of the two elevators.

Gates shows a drive motor 42 attached to a middle guide plate 24 by a bracket 44. The plate 24 is part of a hoist mechanism that moves along three vertically oriented guide members 12, 14, 16 of a tower 10.

Adifon shows a drive machine 322 supported by a crossbeam 320 at the top of car guide columns 302, 304. A drive shaft 324 drives drive sheaves 326, 328 along with flat ropes 330, 332.

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Fichtner shows a gearless elevator drive having a 2:1 suspension ratio and the drive motor being above a path of travel of the car.

Hamaguchi shows an elevator with a 1:1 suspension ratio and a drive motor arranged in a region above a travel path of the car.

Applicants' Response:

Applicants' Claim 1 defines a drive motor 1 coupled to a pair of drive pulleys 3, 3' adapted for engaging the drive means 19, 19'. Contrary to the statement by the Examiner, Bauer shows a single traction sheave 13 engaging the suspension ropes 16.

Regarding Claim 2, the Examiner stated that Bauer arranges "drive pulleys" 18 on opposite sides of an imaginary line horizontal connector of the car guides 10 and 22 (Figures 3 and 4). As shown in Figs. 1, 3 and 4 of Bauer, the car pulleys 18 are not drive pulleys, are mounted on the bottom of the car 5 and are not coupled to the electric drive motor 12.

Thus, Bauer does not show all of the elements recited in Applicants' Claims 1-9.

Applicants amended Claim 10 to define "a gearless drive motor mounted on said crossbeam for engaging the drive means and moving said car and said counterweight in said shaft." Bauer shows a worm gear drive unit 12 with a vertically arranged electric motor 14 in order to obtain a space utilization advantage.

Thus, Bauer does not show all of the elements recited in Applicants' Claims 10-16.

In Cox, an electric motor 14 drives a shaft 12 on which a traction sheave 11 is mounted for car A and a second electric motor 14 drives a shaft 24 on which a traction sheave 25 is mounted for car B.

One of ordinary skill in the art would not substitute the drive unit of Cox for the drive unit of Bauer as suggested by the Examiner. Bauer uses the worm gear drive unit 12 with the vertically arranged electric motor 14 in order to obtain a space utilization advantage. This advantage would be lost by using the Cox drive unit. Furthermore, the combination suggested by the Examiner fails to provide the two pulleys defined by Applicants' Claim 1.

Applicants' Claims 5-7 define the drive motor and brake as being mounted on a bracket fastened to the crossbeam that is attached to the counterweight guides and at least one of the car guides. The Examiner stated that Gates teaches the use of a bracket 44 to fasten a drive motor 42

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and brake to a crossbeam 24. The Gates middle guide plate 24 is not a crossbeam that is attached to the guide members 12, 14, 16 of the tower 10 as defined by Applicants' claims.

Applicants' Claim 12 defines at least two drive means being belts. The Examiner stated that Adifon et al. teaches the use of two drive means 330 and 332 connecting a car 314 and a counterweight 520 and also shows the drive means being belts (Figures 6-8). The Adifon drive means 330 and 332 cannot be substituted for the Bauer suspension ropes 16 since belts must operate in a single vertical plane and the Bauer ropes are routed in two vertical planes angled with respect to one another.

The Examiner stated that the prior art made of record and not relied upon is considered pertinent to Applicant's disclosure. The Examiner cited: Faletto (U.S. Patent # 6471012); Miyoshi (U.S. Patent # 6578672); Orrman et al. (U.S. Patent # 6655500); Faletto et al. (WO 2002/27739 A1); and Bauer (WO 2001/27015 A1). Applicants reviewed these references and found them to be no more pertinent than the prior art relied upon by the Examiner in his rejections.

In view of the amendments to the claims and the above arguments, Applicants believe that the claims of record now define patentable subject matter over the art of record. Accordingly, an early Notice of Allowance is respectfully requested.